

Title: Norovirus transfer between foods and food contact materials.

Topic:

B-1. Consumer safety

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Abstract: (Your abstract must use 10pt Arial font and must not be longer than this box)

Noroviruses (NoV) are a major cause of food borne gastroenteritis worldwide and are often transmitted via infected food handlers. The current study aimed to provide more detailed data regarding the transfer of NoV between food preparation related surfaces and various food products. Gloves specifically recommended for handling of food products and stainless steel discs were chosen as representable food contact materials, while crop lettuce, the crust of a sandwich bun and boiled ham were selected as food products.

The murine norovirus 1 (MNV-1) was used as a NoV surrogate since human infective NoV cannot be cultivated to date. Transfer of MNV-1 between the different surfaces was performed by pressing an inoculated donor surface against an acceptor surface at a pressure of 0.2-0.4 kg/cm² for 10 seconds while performing a 90° twist. To evaluate the effect of subsequent contact moments, donor surfaces were tested a second time for transfer to an identical acceptor surface using the same transfer protocol. The transferred MNV-1 virus particles were subsequently eluted from the acceptor surfaces and detected by plaque assay.

Transfer of MNV-1 to stainless steel was inefficient as a transfer efficiency of less than 2 % was observed regardless of the donor surface. The low affinity of this surface for MNV-1 supports the use of stainless steel in food preparation areas. Regarding the use of gloves as acceptor surface, 9.7 % of the MNV-1 inoculum could on average be transferred from foods and the stainless steel discs to the gloves. This finding suggests that gloves should be replaced frequently during preparation and handling of foods. Furthermore, significant differences were observed for the transfer efficiency of MNV-1 from gloves and the stainless steel discs to different food products. Ham and the crust of a deli sandwich (mean transfer efficiencies of 21.2 % and 26.2 %, respectively) were significant better acceptor surfaces compared to lettuce (mean transfer efficiency of 2.4 %), most likely due to the roughness of these surfaces. Finally, it was shown that the MNV-1 inoculum was significantly less efficient transferred to an acceptor surface at the second contact moment in most cases.

In conclusion, data obtained from the current study can be included in risk assessment models describing the transmission of noroviruses related to preparation of food products and may aid the correct use of intervention measures to prevent NoV transmission during the preparation of food products such as deli sandwiches.

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